

#### **Comments received on September 17, 2013 from US Marine Corps Base Hawaii**

1.a. According to the Fact Sheet, Page 9, Paragraph D.1.b, Applicable Technology-Based Effluent Limitations, it is stated that the standards in Table F-4 are applicable to the facility and therefore shall be established in the draft permit as technology-based permit limitations. Table F-4 shows the applicable technology based permit limitation for pH as between 6.0 and 9.0 standard units yet the permit limitation stated in this part is "Not less than 7.0 and not greater than 8.6" standard units. Request this limit be changed to "Not less than 6.0 and not greater than 9.0 standard units" to reflect what was presented in the fact sheet.

**Response:** The inclusion of the pH effluent limitation of 7.0 to 8.6 standard units within the permit was an error, and text has been added to the fact sheet to indicate that ZOM data shows that the effluent limitations of 6.0 to 9.0 are protective of water quality standards. The permit has been revised to reflect the appropriate pH effluent limitation of 6.0 to 9.0 standard units.

1.b. Fact Sheet Page 23, Paragraph D.2.g indicates that effluent limitations for pH would be established at 7.0 to 8.6 based on water quality standards for open coastal waters contained in HAR 11-54-6(b)(3). The fact sheet provides no rationale for applying receiving water quality standards to the end of pipe. We believe this is an incorrect application of the standards as the standards contained in HAR 11-54-6(b)(3) are water quality standards established for open coastal waters and not intended to be end of pipe discharge standards for waters being discharge into open coastal waters. Further by applying the receiving water quality standards at the "end of pipe", DOH is not taking into consideration dilution and the assimilative capacity of the receiving waters. It is our understanding that analysis conducted on pH data obtained from the Zone of Mixing Monitoring indicates compliance with the pH State Water Quality Standards established for Class A open coastal waters.

**Response:** The applicable of receiving water standards at the end of pipe is appropriate when dilution or assimilative capacity does not exist or is not know. As discussed above, the effluent limitations of 6.0 to 9.0 were found to be protective of water quality at the edge of the ZOM and effluent limitations for pH have been revised to reflect that finding. The application of pH effluent limitations of 6.0 to 9.0 allow for dilution and assimilative capacity within the receiving water.

2.a. Chlordane has been banned from use in the United States since 1988. Marine Corps Base Hawaii, Kaneohe Bay does not use chlordane in any process, therefore any chlordane found in the wastewater must be from sources left in the environment. The amount of chlordane discharged from the MCBH WRF is small in comparison to the amount of chlordane washed into the receiving water from storm water runoff and erosion. For the above reasons, we do not believe the inclusion of an effluent limitation for chlordane is warranted.

**Response:** HAR 11-54 and 11-55 does not allow for excluding discharges of pollutants at concentrations greater than water quality objectives due to the presence of the pollutant being a legacy pollutant present in the environment or small in comparison to additional sources. DOH is obligated to establish effluent limitations for pollutants present in the Permittee's effluent at concentrations that have a reasonable potential to exceed water quality criteria. As discussed in the Fact Sheet, using reasonable potential analysis procedures that are consistent with EPA's Technical Support Document, chlordane was detected in concentrations that were determined to have reasonable potential to cause or contribute to an exceedance of applicable water quality criteria.

2.b. According to the Fact Sheet, Page 18, Paragraph D.2.d(3)(a), the maximum daily effluent limitation of 0.74 ug/l for chlordane was set based on the chronic aquatic life water quality standard and a dilution of 186: 1. The fact sheet goes on to state that based on the fact that the maximum effluent concentration during the previous term was 0.74 ug/l, the DOH has determined that the facility will be able to immediately comply with the proposed maximum daily chlordane effluent limitations. Given that only 4 chlordane analysis were available, the determination that MCBH Kaneohe bay would be able to comply immediately with the proposed maximum daily chlordane effluent limitations is debatable. The RPA analysis presented in the fact sheet calculates a 99% confidence multiplier of 4.7 which signifies an expectation of large variability in results and a potential discharge of chlordane as high as 3.48 ug/l. This indicates the MCBH WRF will more than likely not be able to consistently meet the proposed maximum daily limitation. Based on the above, interim permit limitations and a schedule of compliance for meeting the proposed chlordane limitation appears warranted.

**Response:** Reasonable potential is evaluated based on the procedures established in EPA's TSD and is the responsibility of DOH during the permitting effort. DOH's evaluation of feasibility is limited to a direct comparison of the observed maximum effluent concentration to the proposed effluent limitations. DOH acknowledges that this method does not account for potential variation within the Discharger's effluent. However, it is the responsibility of the Discharger to evaluate feasibility for each pollutant and apply for a compliance schedule during the permitting process. The Discharger must provide the results and supporting documentation of an infeasibility analysis and a compliance schedule to comply with final effluent limitations which represents the shortest period of time necessary to comply. Further, the Permittee must demonstrate that the requested compliance schedule is consistent with the requirements of 40 CFR 122.47. Due to persistent feasibility issues throughout the State with nutrient criteria, DOH has conducted a full feasibility evaluation for all recently drafted permits for the intent of determining the need to a compliance schedule, however DOH is not responsible for, and will not perform this evaluation for all pollutants for all Permittee's.

2.c. The fact sheet also states, "the maximum annual average concentration reported for chlordane during the term of the previous permit was 0.74 ug/l. Since the maximum annual average effluent concentration is greater than the proposed annual average effluent limitation of 0.030 ug/l, the DOH has determined that the facility may not be able to immediately comply with the proposed annual average effluent limitation." Based on this statement, it is our understanding that the permit cannot be issued without interim permit limits and a compliance schedule for meeting the proposed chlordane effluent limitation.

**Response:** DOH's feasibility assessment only indicates that the Permittee may not be able to comply based on historic data, it does not conclude that future compliance is infeasible. It is the responsibility of the Permittee to provide a full feasibility analysis with supporting documentation demonstrating that a compliance schedule is necessary, and to propose a compliance schedule that is consistent with the requirements of 40 CFR 122.47.

3.a. Please explain or show calculation (Reasonable Potential Analysis) on how you can determine based on a maximum reported effluent enterococcus concentration of 250,000 CFU per 100 milliliters for the period January 2009 through March 2012 that the Permittee has the reasonable potential to cause or contribute to an exceedance of the water quality criteria which would warrant establishment of the monthly geometric mean limitation of 6510 CFU per 100 milliliters which is based on a receiving water quality standard of 35 CFU per 100 milliliters. See Fact Sheet Page 24-25, Paragraph D.2.i(1).

**Commented [DC1]:** Alternatively I could throw something together, but I'm not sure how I would demonstrate it's consistent with 40 CFR 122.47 without additional information from the Discharger. Please let me know if you'd like to move forward with compliance schedule for chlordane.

**Response:** Consistent with 3.3 of EPA's TSD, the regulatory authority should consider additional information discussed under Section 3.2 (i.e., type of industry, type of POTW, type of receiving water and designated uses, ect.) when evaluating reasonable potential. Reasonable potential can be determined without effluent or receiving water exceedances of applicable water quality criteria. Because the facility is a POTW, and pathogens are characteristic of treated municipal wastewater, and the beneficial uses of the receiving water include recreation where human contact may occur, reasonable potential for enterococcus has been determined.

The Fact Sheet has been revised to clarify the finding of reasonable potential as described in the above response.

3.b. The proposed maximum daily limitation for Enterococci is 93,186 CFU per 100 milliliter. According to the Fact Sheet, Page 25, Paragraph D.2.i(2), the maximum reported effluent enterococcus concentration from January 2009 through March 2012 was 250,000 CFU per 100 milliliters indicating the Permittee has the reasonable potential to cause or contribute to an exceedance of water quality criteria for enterococcus. Based on the above, it is apparent that the MCBH WRF will not consistently meet the proposed permit limitations as our maximum reported discharge from January 2009 through March 2012 of 250,000 CFU per 100 milliliters exceeds the proposed maximum. Interim permit limitations for enterococci and a schedule of compliance for meeting the proposed enterococci limitation needs to be incorporated into the permit to allow MCBH Kaneohe Bay to program for facility improvements (i.e. installation of effluent disinfection system).

**Response:** It is the responsibility of the Permittee to provide a full feasibility analysis with supporting documentation demonstrating that a compliance schedule is necessary, and to propose a compliance schedule that is consistent with the requirements of 40 CFR 122.47. The Permittee has not provide the necessary information to grant a compliance schedule at this time.

**Commented [DC2]:** Alternatively I could throw something together, but I'm not sure how I would demonstrate it's consistent with 40 CFR 122.47 without additional information from the Discharger.

3.c. The proposed maximum monthly average limit for Enterococci is 6510 CFU per 100 milliliter (based on monthly geometric mean). Between August 2011 and August 2013, the MCBH WRF exceeded this maximum monthly average 21 times. Based on the above, it is apparent that the MCBH WRF will not consistently meet the proposed permit limitations. Interim permit limitations for enterococci and a schedule of compliance for meeting the proposed enterococci limitation needs to be incorporated into the permit to allow MCBH Kaneohe Bay to program for facility improvements (ie. installation of effluent disinfection system).

**Response:** It is the responsibility of the Permittee to provide a full feasibility analysis with supporting documentation demonstrating that a compliance schedule is necessary, and to propose a compliance schedule that is consistent with the requirements of 40 CFR 122.47. The Permittee has not provide the necessary information to grant a compliance schedule at this time.

**Commented [DC3]:** Alternatively I could throw something together, but I'm not sure how I would demonstrate it's consistent with 40 CFR 122.47 without additional information from the Discharger.

3.d. The proposed monitoring requirements for Enterococci require grab samples to be taken between the hours of 1200 and 1500. This will require plant operators to make an extra trip to the lab, and make it difficult for lab personnel to get samples analyzed before the maximum hold times expire. Please explain rational for including this requirement.

**Response:** DOH acknowledges that the requirement to collect grab samples between the hours of 1200 and 1500 is not necessary and has revised the permit to remove this requirement.

4.a. While a 9.75 year compliance schedule may seem like a long time, in the U.S. Marine Corps and Government funding realm, 9.75 years is very short. For example, securing funding for the study which is required within one year of permit issuance is normally programmed three years in advance and must be based on an actual requirement (ie. programming cannot be based on a draft permit or regulation). Funding for the study is not at the sole discretion of MCBH, Kaneohe Bay. Further, since upgrades to the plant (assuming technology is available to allow reduction of Ammonia Nitrogen to the levels proposed in the permit) is expected to exceed \$750,000, the design and construction funding must go through the Military Construction Program which is programmed a minimum of 5 years prior to funding and must gain Congressional approval. Programming for a Military Construction project cannot occur until an alternative to comply with the Ammonia Nitrogen Limitation is identified and budgetary costs for design and construction are developed. Based on the above, it does not appear like the 9.75 year compliance schedule is achievable. Recommend meeting to discuss potential compliance schedule which may require approvals which are beyond MCBH Kaneohe Bay authority.

**Response:** It is the responsibility of the Permittee to provide a full feasibility analysis with supporting documentation demonstrating that a compliance schedule is necessary with applicable water quality standards, and to propose a compliance schedule that is consistent with the requirements of 40 CFR 122.47. However, based on further review of receiving water data, assimilative capacity was determined to be present in the receiving water, and the effluent limitations have been revised. The newly established performance-based effluent limitation for ammonia nitrogen is based on the best estimate of current treatment performance, and the Permittee is expected to be able to comply immediately.

4.b. Item (c) requires that the Permittee notify DOH in writing of its compliance or non-compliance with each interim date in the compliance schedule 14 days prior to the interim date. Is there a regulatory requirement that you be notified prior to the interim compliance date? If not, request this item be changed to no later than 28 days after the interim compliance date.

**Response:** HAR 11-55-22 requires that before or up to fourteen days following each interim date, the permittee provide written notice of the permittee's compliance or noncompliance with the interim dates. The compliance milestones with interim dates are significant milestones for which the ability to comply should be evident a minimum of 14 days in advance. DOH continues to require that the Permittee provide notification in advance of the interim dates of potential compliance with the interim dates, and is unable to extend the reporting time frame to 28 days after the interim compliance date.

5.a. Proposed permit references the *Tripneustes gratilla* (Hawa'a) Fertilation Test Method dated 3/16/98. The latest EPA approved version of the *Tripneustes gratilla* (Hawa'a) Fertilation Test Method is dated April 2012. Please clarify if the intent was to use the 1998 method or if this was an oversight and the 2012 method should be used.

**Response:** Permit revised as necessary.

5.b. 100 percent effluent should be removed from the null hypothesis since our In-stream waste concentration is 0.54%. Also applies to Fact Sheet Page 27, Paragraph D.2.k.

**Response:** Permit revised as necessary.

5.c. Our existing permit allows for termination of accelerated testing (or used as necessary in performing the TRE/TIE) if a TRE/TIE is initiated prior to completion of the accelerated testing schedule. Could this be included in the proposed permit?

**Response:** Accelerated monitoring is necessary if the cause of toxicity is not known, or if the cause of toxicity is known, and persists in two consecutive samples. Accelerated monitoring is necessary to evaluate the severity and extent of toxicity within the Permittee's discharge, evaluate compliance with applicable effluent limitations, and evaluate the effectiveness of a permittee's TRE/TIE. Conducting a TRE/TIE is not in-itself sufficient to determine compliance with applicable water quality criteria or evaluate the effectiveness of toxicity reduction strategies implemented by the Permittee. The current requirement for accelerated testing has been retained from the proposed permit.

6.a. This portion of the permit requires the Permittee to conduct a ZOM dilution study within 3 years of the effective date of the permit. The Marine Corps Base Hawaii (MCBH), Kaneohe Bay does not own the outfall and pays the City and County of Honolulu (CCH) for use of the outfall. Discussions with the City and County of Honolulu indicate that a ZOM Dilution Study report is being drafted which will not only include an average dilution results, but also include recalculation of the critical minimum initial dilution which is currently determined to be 186: 1. Based on the fact that the City and County of Honolulu is already conducting a ZOM Dilution Study, this requirement is a duplication of work and should be removed from the permit.

**Response:** The Permittee has received considerations during the permitting process based on the best available information that provide dilution and ultimately less conservative effluent limitations. These considerations were provided based on limited data, and additional support for continued consideration of dilution/assimilative capacity is necessary to ensure the protection of aquatic life for pollutants contained within the effluent at concentrations that exceed water quality standards. It is the responsibility of the Permittee to demonstrate the presence of dilution and assimilative capacity at the point of discharge, however the Permittee may independently, or in cooperation with CCH, conduct the required study.

6.b. Since a new dilution study is being conducted by the CCH which will identify a minimum and average dilution at the edge of the zone of Mixing as well as recalculation of the critical minimum initial dilution, all new proposed limitations which are calculated based on the ZOM (ie. nitrate plus nitrite, ammonia nitrogen) or the minimum critical initial dilution (ie. Chlordane, Chronic Toxicity, Enterococci) using past plant performance data should be issued as interim limits which will be recalculated once the results of the CCH dilution study is finalized as anti-backsliding regulations would prevent recalculation to the proper limitation if the dilution is determined to be higher than currently being used.

**Response:** It is the responsibility of the Permittee to ensure that all necessary information is submitted with the NPDES permit renewal application, including any dilution analysis to be considered during the permitting effort. The proposed permit has been written on the best available information provided at the time of permitting. Interim effluent limitations can not be established without final effluent limitations being established within the same permit. However, backsliding is allowable when new information is available that was not available at the time the previous permit was written. In the case that alternative dilutions are determined applicable, DOH may revise the applicable effluent limitations based on this new information. However, the Permittee would still be responsible for demonstrating compliance with State and federal anti-degradation requirements for any increase in dilution prior to being implemented in an NPDES permit.

7. This portion of the permit requires the Permittee to submit an annual receiving water monitoring report by March 31 of each year. The MCBH, Kaneohe Bay does not own the outfall and pays the CCH for use of the outfall and other services. Part of the agreement is that the CCH perform receiving water quality monitoring and reporting for the shared outfall. Based on the above, this requirement is a duplication of work and should be removed from the permit.

**Response:** The ownership of the outfall is not **germane** to the necessity to evaluate the impact of the discharge on the receiving water. The Permittee may individually, or in cooperation with CCH, conduct the necessary receiving water monitoring necessary to demonstrate that the discharge of effluent is not significantly or negatively impacting the aquatic life and human health within the receiving water.

8. This portion of the permit requires the Permittee to inspect the ocean outfall and submit investigative finding to the Director at least once during the term of this permit. The MCBH, Kaneohe Bay does not own the outfall and pays the CCH for use of the outfall and other services. CCH owns, operates, maintains and inspects the outfall and is required to conduct this inspection as a requirement of their permit. Based on the above, this requirement is a duplication of work and should be removed from the permit.

**Response:** The ownership of the outfall is not **germane** to the necessity to evaluate the impact of the proper operation of the diffuser. The Permittee may individually, or in cooperation with CCH, conduct the necessary receiving water monitoring necessary to demonstrate that the diffuser is in good working order.

9. Can DOH provide documentation or published data which shows that the shoreline area for this outfall is within a coastal region which receives less than three million gallons per day of fresh water discharge per shoreline mile which would substantiate the use of the "Dry" criteria.

**Response:** **NEED DOH HELP. WHY IS THIS CONSIDERED DRY?**

10. HAR Section 11-54-6(b)(3) pertains to established water quality standards related to nutrients. These standards include limitations for "Geometric mean not to exceed the given value", "Not to exceed the given value more than ten percent of the time" and "Not to exceed the given value more than two percent of the time". Please explain your rationale for only evaluating the "Geometric Mean not to exceed value". Also the DOH should publish clear and consistent guidance on how DOH determines compliance with these limitations and uses these limitations in the development of permit limits.

**Response:** Only a single criteria for a parameter need be exceeded to support reasonable potential for that parameter. It is not necessary to demonstrate reasonable potential for all criteria for each parameter. Often, reasonable potential is determined based solely on the most stringent criteria. Compliance determine for nutrients is evaluated on an annual basis, as described in the proposed permit. Additional clarification for specific scenarios may be provided by contacting DOH.

11. Rather than simply providing a summary of the Reasonable Potential Analysis, DOH should provide and show all data and calculations used in its RPA, especially for those parameters which DOH has determined have the reasonable potential to exceed applicable standards.

**Response:** The steps to perform a RPA are provided in detail in EPA's *Technical Support Document for Water Quality-Based Toxics Control* (the TSD, EPA/505/2-90-001, 1991). A summary of all the RPA results is provided, and the calculations for the individual pollutants determined to have reasonable potential are provided in full within the fact sheet.

12.a. The State of Hawaii Department of Health should clearly show in the fact sheet, all data used in this determination. In addition, all calculations, including statistical analysis showing the validity of the data should be provided. Further, DOH should present their rationale for using an annual geometric vice a monthly moving geometric mean based on the previous 12 months of data for comparison to the Water Quality Standards, or for that matter why a single geometric mean for the past 5 years of data couldn't be compared to the Water Quality Standards for the purpose of this determination, how it was determined that the last 5 years of data would be used vice last 3 years or some other random timeframe and why analysis of the "not to exceed the given values more than 10 percent of the time" or "not to exceed the given value more than two percent of the time" were not analyzed also.

**Response:** The purpose of the fact sheet is to provide rationale for the findings and requirements of the permit. The fact sheet clearly explains the methods and data set used to determine reasonable potential and assess assimilative capacity. This data is available to the public upon request apart from the fact sheet and may be reviewed by the Permittee. Water quality criteria contained in HAR 11-54 must be implemented by DOH. Receiving water monitoring has been established for the Permittee and will be used in future permitting efforts to evaluate reasonable potential and assimilative capacity.

For nutrients, DOH has determined using a calendar year meets the requirements of 11-54. A running 12-month geometric mean may result in numerous running 12-month geometric mean exceedances due to a single sampling result (an exceedance each new month until the highest result drops off after 13 months). As such, DOH has determined that a calendar year provides a more reasonable period for evaluating compliance.

The nutrient criteria must be implemented, and compliance must be evaluated with the criteria, thus a time period for assessment must be established. A calendar year has been chosen because it represents the minimum period of time that encompasses the seasonal variation of nutrients within the receiving water throughout the year, and it allows DOH to evaluate compliance on a regular basis. See Response 11 regarding assessment of criteria beyond the geometric mean.

Five years of data was used because DOH believes this data accurately represents the current state of the receiving water and captures reasonable variation within the receiving water to result in both conservative assessments of reasonable potential and effluent limitations. DOH acknowledges that additional years of data could be used (more conservative), but believes 5 years of data represents a reasonable time period for the analysis. The Permittee has not provided any rationale why the use of this data is not representative of current or future quality and variation.

12.b. As presented in the fact sheet, this limited analysis would result in the imposition of Ammonia Nitrogen Limitations of 2 ug/l (geometric mean) being imposed on the MCBH Kaneohe Bay end of pipe discharge. Due to the far reaching financial implications of this determination, which essentially results in the MCBH Kaneohe Bay being required to install some unknown tertiary treatment system since no current technology is available which can consistently meet the 2 ug/L limitation, we believe it is in the best interests of the taxpayers of

the United States for a comprehensive analysis to be performed prior to making such a determination.

**Response:** The previously proposed final effluent limitations for ammonia nitrogen were based on the applicable water quality objectives contained in HAR 11-54. The implementation of applicable water quality objectives are not discretionary, and must be implemented in a manner protective of water quality. As detailed in the Fact Sheet, the Permittee's effluent has been shown to have reasonable potential to exceed water quality objectives, and effluent limitations are necessary. A compliance schedule was established to provide time for the Permittee to identify potential methods to comply with the applicable water quality objectives. DOH assumed that substantial and costly facility alterations may be necessary, but identifying the specific methods to comply with applicable water quality objectives is the responsibility of the Permittee. Additionally, the Permittee may have evaluated alternative methods besides treatment to achieve compliance with the final effluent limitations such as re-evaluating assimilative capacity within the receiving water, alternative disposal methods, and reuse. Further, the permit requires the Discharger to evaluate available dilution and assimilative capacity within 3 years of the effective date of the permit. If assimilative capacity was available, and the effluent is shown not to contain reasonable potential, DOH may have determined not to carry over the final effluent limitations for nutrients based on newly available information.

However, based on further review of receiving water data, assimilative capacity was determined to be present in the receiving water, and the effluent limitations have been revised. The newly established performance-based effluent limitation for ammonia nitrogen is based on the best estimate of current treatment performance, and the Permittee is expected to be able to comply immediately.

12.c. Based on the information presented in this fact sheet, it could be argued that the 2009 geometric mean was an anomaly rather than the norm and that the data from 2010 through 2012 clearly shows improved water quality with assimilative capacity for Ammonia Nitrogen.

**Response:** The Permittee does not provide rationale for the 2009 geometric mean being an anomaly. The 2009 data appears to fall within a single standard deviation of the mean, and there is no information to suggest sampling nor analytical abnormalities.

12.d. The fact sheet states, "The observed maximum effluent concentration for total nitrogen was 29 mg/l. Subtracting monthly nitrate + nitrite concentrations from total nitrogen, provides monthly ammonia nitrogen data from January 2009 through March 2012 for ammonia nitrogen plus organic nitrogen. The maximum observed concentration for ammonia plus organic nitrogen (total nitrogen minus nitrate and nitrite), was 26,810 ug/l. Can you please provide further detail on this calculation? Were the monthly nitrate + nitrite data subtracted from the highest observed total nitrogen concentration or was the monthly nitrate + nitrite data subtracted from the corresponding monthly total nitrogen data? Subtracting the monthly nitrate + nitrite data from the highest observed concentration would seem to be incorrect. Also, how many data points were analyzed in this data set?"

**Response:** The monthly nitrate+nitrite data was subtracted from the corresponding total nitrogen data. Because total nitrogen is only monitored by the Permittee once per month, it is both from the monthly average and highest observed concentration. This provides a less stringent interim effluent limitation to the Permittee than would have been possible to calculate had actual daily nitrate+nitrite data been available. As stated in the fact sheet, due to limited data, this is the best estimate of treatment performance at the facility. Further, this represents

the 98.5<sup>th</sup> percentile of data for total nitrogen, which includes nitrate+nitrite, and thus the Permittee was not expected to have issues complying with the previously proposed interim effluent limitation or the currently proposed performance-based effluent limitations (based on this same analysis). A total of 38 individual data sets were evaluated.

12.e. The interim effluent limitation for ammonia Nitrogen was set based on the highest observed (a single ammonia nitrogen event) and calculated values (Highest observed Total Nitrogen minus monthly nitrate-nitrite concentration) for the period January 2009 through March 2012 and the highest annual geometric mean from 2009 through 2011. Why isn't the effluent limitation set based on the projected maximum concentration determined from a Reasonable Potential Analysis run on the available Ammonia Nitrogen data. By setting the limitation at the maximum Ammonia Nitrogen reported from January 2009 through March 2012 and the highest geometric means from 2009 through 2011, you are setting up the Marine Corp Base Hawaii, Kaneohe Bay Water Reclamation Facility to fail this effluent limitation.

**Response:** The RPA for nutrients was based on receiving water concentrations at the edge of the ZOM and the use of the receiving water concentration would not be appropriate. Due to the application of nutrient criteria as a geometric mean over a calendar year and unknown dilution at the edge of the ZOM, EPA's TSD procedures were not used in evaluating reasonable potential for nutrients and a projected maximum concentration has not been determined. As explained in the fact sheet, a direct comparison of the ZOM data (geometric mean over a calendar year) to the water quality criteria was performed to evaluate reasonable potential. The TDS calculates a projected maximum that accounts for variation within the data and represents the expected 99<sup>th</sup> percentile of the data. Based on the 38 individual data points, and assuming a lognormal distribution, the 99<sup>th</sup> percentile of the observed data (total nitrogen – nitrate+nitrite) is 24,901 ug/L. DOH has determined that using the best estimate of the actual maximum effluent concentration provides an effluent limitation that is more reasonable given that the observed data is greater than the estimated 99<sup>th</sup> percentile. DOH believes the Permittee will be able to consistently comply with this effluent limitation.

13. The effluent limitation for Nitrate Plus Nitrite Nitrogen was set based on the highest reported effluent concentration for the period January 2008 through December 2012. When determining whether or not a set of data has the potential to exceed water quality, a Reasonable Potential Analysis is used to determine the projected maximum concentration based on the available data. Why isn't the effluent limitation set based on the projected maximum concentration determined from a Reasonable Potential Analysis run on the available Nitrate Plus Nitrite data. By setting the limitation at the maximum Nitrate Plus Nitrite Nitrogen reported from January 2008 through December 2012, you are setting up the Marine Corp Base Hawaii, Kaneohe Bay Water Reclamation Facility to fail this effluent limitation.

**Response:** The RPA for nutrients was based on receiving water concentrations at the edge of the ZOM and the use of the receiving water concentration would not be appropriate. Due to the application of nutrient criteria as a geometric mean over a calendar year and an unknown dilution at the edge of the ZOM, EPA's TSD procedures were not used in evaluating reasonable potential for nutrients and a projected maximum concentration has not been determined. As explained in the fact sheet, a direct comparison of the ZOM data (geometric mean over a calendar year) to the water quality criteria was performed to evaluate reasonable potential. The TDS calculates a projected maximum that accounts for variation within the data and represents the expected 99<sup>th</sup> percentile of the data. Based on the 60 individual data points, and assuming a lognormal distribution, the 99<sup>th</sup> percentile of the observed data is 5,985 ug/L. DOH has

determined that using the best estimate of the actual maximum effluent concentration provides an interim effluent limitation that is more reasonable given that the observed data is greater than the estimated 99<sup>th</sup> percentile. DOH believes the Permittee will be able to consistently comply with this interim effluent limitation.

14. The proposed single sample monthly maximum for Nitrate Plus Nitrite Nitrogen is set at 6230 ug/L. The July 2013 Nitrate Plus Nitrite Nitrogen result for the MCBH WRF was 6400 ug/L. Based on the above, it is apparent that the MCBH WRF will not consistently meet the proposed permit limitation.

**Response:** The data analysis for nitrate + nitrite was limited to the effluent data available during the beginning of the permitting process, from January 2008 through December 2012, and represents five years of effluent data. As explained in previous responses, the observed maximum effluent concentration during the period in review was established as the interim effluent limitation, and represents a value greater than the 99<sup>th</sup> percentile (recommended in EPA's TSD). A single exceedance of the interim effluent limitation over 5 years is not sufficient rationale to determine that the effluent limitation is inappropriate as the effluent limitation is already greater than the 99<sup>th</sup> percentile. DOH believes the Permittee will be able to consistently comply with this interim effluent limitation.

**Commented [DC4]:** Alternatively, we could just up the effluent limitation based on this new information. Please let me know what you think.

15. Please provide rationale for the choice of the time period and the criteria is used to determine this time period in your analysis of the various effluent and receiving water data. The timeframe should be consistent for each parameter (like from the inception of permit through the end of 2012) rather than random as it currently appears. For example:

a. The RPA analysis for effluent monitoring data is based on data submitted January 2008 through March 2012 whereas the receiving water data is based on data submitted January 2008 through October 2012 (Page 12, Paragraph D.2.c(2)).

**Response:** The vast majority of data is based on January 2008 through March 2012 (with the exception being nutrients), and represents the data that was available at the time the analysis was conducted. DOH made no attempt to selective choose the data sets. Data from the last five years was collected, summarized, and used for the analyses, at which point the RPA was performed. Because the RPA considers effluent variability based on the limited data, updating the data set continuously is not necessary. DOH evaluated the application of nutrient data numerous times during the permitting process, using a direct comparison of the maximum receiving water concentration to the applicable water quality standard. Because the direct comparison does not consider variability, the data set was updated each time using the most recent data.

b. The interim effluent limitation for Ammonia Nitrogen appear to be based on data from January 2009 through March 2012 or data from 2009 through 2011 (Page 21, Paragraph D.2.e(4)).

**Response:** DOH made no attempt to selective choose the data sets. The previously proposed interim effluent limitations for ammonia nitrogen were based on calculated values from total ammonia and nitrate+nitrite from January 2009 through March 2012 which were available up to the beginning of the permitting process. Effluent data for nitrate+nitrite was readily available starting in January 2009 and provides 38 data points for consideration, which is sufficient to evaluate recent treatment performance.

c. Effluent Limitation for Nitrate Plus Nitrite Nitrogen appear to be based on data from January 2008 through December 2012 (Page 23, Paragraph D.2.f(4)).

**Response:** As stated in an earlier response, DOH evaluated the application of nutrient data numerous times during the permitting process, using a direct comparison of the maximum receiving water concentration to the applicable water quality standard. Because the direct comparison does not consider variability, the data set was updated each time using the most recent data to account for the observed variability.

d. Enterococcus Limitations appear to be based on effluent data from January 2009 through March 2012.

**Response:** As noted in the other responses, data from January 2008 through March 2012 was used by DOH for permit development (with the exception of nutrients). DOH revised the implementation of nutrients during the permitting process. When re-evaluating nutrients, more recent data was available and used in the evaluation. For enterococcus, effluent data was collected, summarized, and used for analysis with the majority of other pollutants. The most recent data at the time of analysis was March 2012.

16. Please provide justification for requirement to monitor the influent for Chlordane, Oil and Grease, Turbidity, Ammonia Nitrogen, Nitrate Plus Nitrite Nitrogen, Total Nitrogen and Total Phosphorus. The Fact sheet provides a justification for monitoring the effluent for all the parameters listed above except for Turbidity but does not provide a justification for influent monitoring. Also, please provide justification for effluent monitoring of Turbidity.

**Response:** Influent monitoring is necessary to evaluate the need for further source control requirements to meet applicable effluent limitations and to provide data to characterize facility influent for future permitting efforts. Effluent monitoring for turbidity is necessary for evaluating the source of a water quality standard exceedance at the edge of the ZOM and to characterize the effluent for future permitting needs.

17. Request that Authorized Person to Sign and Submit Reports be changed from C. E. Blanchard to Lee Yamamoto, Deputy Director MCBH Facilities Department (808) 257-0800.

**Response:** Fact sheet has been revised to reflect this request.

#### **Comments received on September 20, 2013 from City and County of Honolulu**

1. General Comment: CCH recommends that DOH defer the issuance of the Kaneohe Bay Water Reclamation Facility (KBWRF) final draft NPDES permit until it reviews and addresses the City's comments when submitted during the draft permit 30-day public comment period for the Kailua Regional Wastewater Treatment Plant (KRWWTWP). Since both plants discharge through the Mokapu Ocean Outfall, there will be relevant information and analyses in the City's comments on the KRWWTWP permit that should be considered for the KBWRF NPDES permit.

**Response:** **DOH?** The NPDES permit for MCBH Kaneohe has been drafted based on the most recent and relevant information and shall be issued as scheduled.

**Commented [DC5]:** DOH may want to consider waiting.

2. The City and County of Honolulu submitted a June 19, 2013 letter (EMC 13-117) demonstrating compliance with the State Water Quality Standards on pH at the Mokapu Outfall's Zone of Mixing Stations. There is no reasonable potential basis to establish Water Quality Based Effluent Limitation (Le. HAR § 11-546 open coastal waters pH criteria) to the MBCH treatment plant effluent. The appropriate end of pipe pH limitation is the technically based federal effluent standard of 6.0 to 9.0 s.u. Federal regulation provides in relevant part that "effluent values for pH shall be maintained within the limits of 6.0 to 9.0." 40 C.F.R. § 133.102(c).

On Page 9 of the Fact Sheet, under 1.b., Applicable Technology-Based Effluent Limitations, DOH has indicated that the 40CFR 133 technology-based effluent limits are applicable to the facility and therefore is being established in this permit; however this is not the case for pH.

**Response:** Federal limitations are technology-based effluent limitations and do not over ride applicable water quality-based effluent limitations. The most stringent applicable technology-based or water quality-based effluent limitations are applied in NPDES permits. However, as discussed in the responses above, a review of ZOM data indicates that the effluent limitation of 6.0 to 9.0 appears protective of water quality standards at the edge of the ZOM, and a pH limitation of 6.0 to 9.0 has been applied in the permit.

3. The rationale for imposing the ammonia nitrogen and proposed schedule fails to consider the state of current wastewater treatment technology. The City is not aware of any current wastewater treatment technology that allows wastewater to be treated to the specified limits for ammonia nitrogen and the requirement should be deleted. Table 6 assumes that reasonable alternatives exist to comply with the final effluent limitations for ammonia nitrogen established in section A.1 of the draft permit. It is far from clear that reasonable alternatives exist. This would require the development of technology, which could entail bench-scale and pilot-scale testing that would likely not be possible to accomplish within the two year period.

No guidance (or definition) is provided on the term "reasonable alternatives". This is crucial as it is the basis for the identification and selection of the option to be implemented. It is unclear what criteria would be applied to determine whether such approaches are reasonable.

**Response:** The previously proposed final effluent limitations for ammonia nitrogen are based on the applicable water quality objectives contained in HAR 11-54. The implementation of applicable water quality objectives are not discretionary, and must be implemented in a manner protective of water quality. As detailed in the Fact Sheet, the Permittee's effluent has been shown to have reasonable potential to exceed water quality objectives, and effluent limitations are necessary. A compliance schedule was established to provide time for the Permittee to identify potential methods to comply with the applicable water quality objectives. DOH assumed that substantial and costly facility alterations may be necessary, but identifying specific methods to comply with applicable water quality objectives is the responsibility of the Permittee. Additionally, the Permittee may have evaluated alternative methods besides treatment to achieve compliance with the final effluent limitations such as re-evaluating assimilative capacity

within the receiving water, alternative disposal methods, and reuse. Further, the permit requires the Discharger to evaluate available dilution and assimilative capacity within 3 years of the effective date of the permit. If assimilative capacity was available, and the effluent is shown not to contain reasonable potential, DOH may have determined not to carry over the final effluent limitations for nutrients based on newly available information.

However, based on further review of receiving water data, assimilative capacity was determined to be present in the receiving water, and the effluent limitations have been revised. The newly established performance-based effluent limitation for ammonia nitrogen is based on the best estimate of current treatment performance, and the Permittee is expected to be able to comply immediately.

4. The *T. gratilla* WET test has been updated for the Hawaiian sea urchin. The proper reference is the 2012 standard.

**Response:** Permit has been revised as suggested.

5. Delete "100% effluent" concentration since the instream wastewater concentration (IWC) is not 100% effluent but rather 0.54% (based on a dilution of 186:1). This IWC will change upon the City submitting a dilution study for the Mokapu Ocean Outfall.

**Response:** Permit has been revised as suggested.

6. The City and County of Honolulu (CCH) will be providing to State Department of Health the Plumes modeling dilution results for the Mokapu Ocean Outfall. The MCBH should not be required to conduct a ZOM dilution study since it shares the outfall with CCH.

**Response:** The Permittee has received considerations during the permitting process based on the best available information that provide dilution and ultimately less conservative effluent limitations. These considerations were provided based on limited data, and additional support for continued consideration of dilution/assimilative capacity is necessary to ensure the protection of aquatic life for pollutants contained within the effluent at concentrations that exceed water quality standards. It is the responsibility of the Permittee to demonstrate the presence of dilution and assimilative capacity at the point of discharge, however the Permittee may independently, or in cooperation with CCH, conduct the required study.

7. CCH is currently monitoring the receiving waters quality, including field observations, for its discharge from Mokapu Ocean Outfall. Thus, the MCBH should not be required to submit an annual receiving water monitoring report.

**Response:** The ownership of the outfall is not germane to the necessity to evaluate the impact of the discharge on the receiving water. The Permittee may individually, or in cooperation with CCH, conduct the necessary receiving water monitoring necessary to demonstrate that the discharge of effluent is not significantly or negatively impacting the aquatic life and human health within the receiving water.

8. CCH owns, maintains, inspects and operates the Mokapu Ocean Outfall. Thus, MCBH should not be required to conduct an inspection of the outfall. CCH conducts the outfall inspection as required under its NPDES permit.

**Response:** The ownership of the outfall is not **germane** to the necessity to evaluate the impact of the proper operation of the diffuser. The Permittee may individually, or in cooperation with CCH, conduct the necessary receiving water monitoring necessary to demonstrate that the diffuser is in good working order.

9. The table indicates historical daily max flow is 25.8 MGD which appears to be a typographical error because the treatment plant is a 2 MGD Trickle Filter facility.

**Response:** The daily maximum effluent flow reported during March 2009 was 25.76 MGD.

**Commented [DC6]:** DOH, please confirm, I don't have the actual DMR sheets.

10. CCH will be submitting a dilution study to DOH which will provide updated minimum and average dilution values for the Mokapu Ocean Outfall receiving water based on recent monitoring data.

**Response:** **DOH?** The NPDES permit for MCBH Kaneohe has been drafted based on the most recent and relevant information and shall be issued as scheduled.

**Commented [DC7]:** DOH may want to consider waiting.

11. There is no reasonable potential basis to establish Water Quality Based Effluent Limitation (Le. HAR § 11-546 open coastal waters pH criteria) to the MCBH treatment plant effluent. The appropriate end of pipe pH limitation is the technically based federal effluent standard of 6.0 to 9.0 s.u. Federal regulation provides in relevant part that "effluent values for pH shall be maintained within the limits of 6.0 to 9.0." 40 C.F.R. § 133.102(c).

**Response:** See Response 2.

12. The calculation of the WQBEL level for chlordane used maximum concentrations of the pesticide coupled with the minimum initial dilution value; as such it represents a "worst case" scenario. The State Toxics Control Program: Derivation of Water Quality-Based Discharge Toxicity Limits for Biomonitoring and Specific Pollutants (STCP) provides that average dilution values are used when establishing human-health standards based upon fish consumption for carcinogens.

The water quality criterion for chlordane was based on human health using carcinogenic endpoints in the calculation. This calculation is conservative in terms of cancer potency and bio-concentration factors.

On June 16, 2009, the Governor of the State of Hawaii signed legislation that conforms the State Water Quality Standard for Chlordane to the current federal standard as set forth in the latest EPA National Recommended Water Quality Criteria (Office of Science and Technology,

2002 & 2006) which incorporate over 20 years of nationwide scientific research concerning the carcinogenicity of toxic pollutants. This amendment was adopted by the Hawaii State Department of Health in December 2009, approved by the Governor on January 25, 2010 and submitted to the EPA for approval in February 2010.

**Response:** The RPA and effluent limitations are based on the applicable water quality standards specified in HAR 11-54 and remains applicable until HAR 11-54 is revised to reflect any updated standards.

13. There appears to be an error in the calculation of assimilative capacity since the aggregated monitoring data at all depths from stations MB1 and MB2 were used instead of control stations MB1 and MB6.

**Response:** Data from stations MB1 and MB6 were used.

14. See comment 3.

**Response:** See response to comment 3.

15. The contention that there is no assimilative capacity is contradicted by the fact that the sheet receiving water is not impaired. The Fact Sheet (page 5) acknowledges that "CWA Section 303(d) requires states to identify specific water bodies where water quality standards are not expected to be met after implementation of technology-based effluent limitations on point sources." Mokapu outfall is a joint outfall used by both the Kailua Wastewater Treatment Plant and the Marine Corps Base Hawaii, Kaneohe Bay Water Reclamation Facility. Treated effluent is discharged to the Pacific Ocean of of Mokapu Outfall Serial No. 001 through a diffuser approximately 3323 feet offshore and 105 feet below the water. The location of the Mokapu WWTP Outfall Serial No.001 in the Pacific Ocean is not listed as an impaired water body on either the 2008/10 State of Hawaii Water Quality Monitoring and Assessment Report: Integrated Report to the U.S. Environmental Protection Agency and the U.S. Congress Pursuant to Sections §303(d) and §305(b), Clean Water Act or the 2012 Report.

**Response:** 303(d) lists may not reflect water quality within the immediate vicinity of the outfall. Both the 303(d) list and receiving water data are used when determining assimilative capacity. In the evaluation of assimilative capacity for ammonia nitrogen, and as previously detailed in the Fact Sheet, receiving water data indicated that assimilative capacity was not available. However, DOH has revised the assimilative capacity review to include an analysis of the pollutants within the receiving water over time, and consider "trend". Based on an analysis of the trend of the receiving water, assimilative capacity was determined to be present within the receiving water.

16. See comment 3.

**Response:** See response to Comment 3.

17. DOH should postpone specifying the enterococcus effluent limit (ie., geometric mean and Single sample maximum) until DOH receives the City's outfall dilution study for the Mokapu ocean outfall. The results of bacteria sampling support the conclusion that water contact recreational activities are protected beyond the ZOM.

**Response:** **DOH?** The NPDES permit for MCBH Kaneohe has been drafted based on the most recent and relevant information and shall be issued as scheduled.

**Commented [DC8]:** DOH may want to consider waiting.

18. Delete "100% effluent" concentration since the instream wastewater concentration (IWC) is not 100% effluent but rather 0.54% (based on a dilution of 186:1). This IWC will change upon the City submitting a dilution study for the Mokapu Ocean Outfall.

**Response:** Fact sheet revised as suggested.

19. The RPA spread sheet of nutrient monitoring data for MB1, MB2 and MB3 shows that subsamples (surface, mid-depth, bottom) from the water column were combined to calculate an annual geometric mean for each station. The highest annual geometric mean calculation was reported in Table F-12.

A different method was applied to data for stations MB4, MB5 and MB6 that incorrectly combines differing time frames.

For non-detects reported for enterococcus and the nutrient data, DOH used half of the reporting limit and used those for calculating the annual geometric means. Using a different substituted value (e.g., a quarter of the reporting limit) in lieu of a non-detect may alter the outcome of the results and conclusions.

**Response:** The same method was applied to nutrient data at stations MB1 through MB6, and correctly combines annual geomeans for each station. An error is not apparent in the current calculations.

EPA's TSD and Hawaii's State Toxics Control Program do not recommend an approach for analyzing multiple sample results below a detection limit. Non-detect values are reported when the concentration of the pollutant is less than the laboratory's detection values for that pollutant, and does ensure that the pollutant is not present at lower concentrations. The use of "zero" for non-detects (particularly for pollutants that have been observed in the effluent/receiving water during the same time period in the same water column) will underestimate its true value. "Non-detect" is unusable in any statistical analysis of the data, and must be replaced by a valid estimate, a practice typically called imputation. The censored data must be addressed in some manner for statistical analysis to occur. As a practical consideration, DOH has chosen to use the common practice of assigning half the method detection value to non-detects.

Further, non-detects were not present for the maximum calculated receiving geomeans for total nitrogen, nitrate + nitrite, and total phosphorous. A single non-detect was present in calculating the maximum receiving water geomean for ammonia, the other 11 results indicate the ammonia is present in the receiving water at detectable concentrations. In addition, ammonia was detected during the same sampling event in the water column directly above and below the non-detect sample, indicating that ammonia was most likely present at some concentration, although undetectable. Given the results in the water column above and below the non-detect (3 and 2 ug/L), and the small data set, an assumption of one-half the detection value is reasonable.

#### **Comments received on September 19, 2013 from James S. Kumagai**

1. A brief history of the environmental movement is reviewed here to define the context for the comments and recommendations presented here for consideration. The City and County of Honolulu adopted the Water Quality Program for Oahu (WQPO, 1972). The development of the program started in 1969 even before the passage of the PL 92-500, or the Federal Water Pollution Control Amendments of 1972. Nevertheless, the public debate over the provisions of the law was well underway early in the decade of the 1960s. What emerged in the public forefront were the laws of ecology as aptly stated by Barry Commoner in his book in 1971.

1. Everything is connected to everything else.
2. Everything must go somewhere.
3. Nature knows best.
4. There is no such thing as a free lunch.

The decade of the 1960s was action-packed for the country and for Hawaii. Following statehood in 1959 and the subsequent economic boom and urban growth on Oahu, there were 45 individual wastewater treatment plants constructed on Oahu to treat the increased wastewater discharges resulting from a booming population. All effluent discharges went into inland streams and water bodies or nearshore coastal waters. Treatment systems were designed by the then "10-State Standards" of the Upper Mississippi River Basin.

The design and regulatory culture of that day was technology-based, i. e., build more treatment plants. Continue discharging effluent at least-cost into the inland and nearshore waters of the island. It was routine. However, public concerns and outcry grew over the impact of some of the discharges. The system was not working. What became evident was there was more to it than engineering technology. There were already questions on the wisdom of continuing that wastewater management strategy into the future of Oahu.

The City and County of Honolulu commissioned a team of consulting engineering firms in 1969 to develop of the Water Quality Program for Oahu to study the issues and recommend a plan for a program. What emerged immediately was the principle of discharging effluent where it would do the minimum harm to the environment or where it might do some good as in reclamation and reuse. Everything must go somewhere. In an island community with limited land resources and an ecosystem in the middle of the Pacific, the choice for the backbone of the water quality program was the deep ocean outfall disposal systems. Here, space, time, and energy are virtually unbounded for stabilization of wastewater discharges according to nature's way. Nature

knows best. The ultimate boundary conditions of our ecosystem were seen to be limitless compared to those of the Continental USA.

**Response:** DOH acknowledges the commenter's discussion. The discussion does not appear to necessitate a response.

2. In 1970, the then MCBH system was discharging 1.0 mgd primary effluent in Kaneohe Bay. The City and County of Honolulu was discharging a 2.5 mgd trickling filter effluent from Kaneohe STP and 0.1 mgd package aeration plant from Ahuimanu STP. There were already water quality problems noted in Kaneohe Bay with eutrophication and coral toxicity. WQPO determined from field monitoring studies and laboratory assays for biostimulation of selected primary producers and for toxicity on coral planulae. It was concluded that more treatment even to tertiary levels would not assure acceptable risk of adverse impact on the local ecosystem. The recommendation was to divert the point discharges completely out of Kaneohe Bay into the Mokapu outfall system in the open coast regime where space, time and energy were available to allow nature to complete the treatment and disposal of effluent efficiently. That was a zero risk alternative for Kaneohe Bay, with the least harm to the environment in the open coast regime off Mokapu Point to give a net positive environmental gain.

Besides, WQPO evaluated the water quality issue holistically and identified the reality of nutrients and sediment runoff from the tributary stream flows to influence the ecosystem in the bay to negate whatever gains from advanced treatment to meet nutrient limits. Money would have been spent to achieve nothing, except perhaps for political expediency.

**Response:** DOH acknowledges the commenter's discussion. The discussion does not appear to necessitate a response.

3. Nutrient limits proposed in the draft permit will do nothing in water quality enhancement but will harm the environment in the broader holistic sense.

The problem may be with the regulatory artifacts of setting nutrient standards. It is not a real environmental problem for us, but it can be made to become a problem artificially. For one thing, there is no real-world impairment of beneficial uses of the local, open coastal waters from nutrients. There is no scientific basis for imposing effluent limits for nitrogen, nitrate/nitrate and/or ammonia.

Instead, an environmental problem can be created by imposing the effluent limits for nutrients as it is being proposed in the draft permit to force expensive remedial action to solve a non-issue or to resolve an artifact of the regulatory system.

Fundamentally, nitrogen and other nutrients are essential for primary productivity in the coastal waters. For Kaneohe bay, the problem was eutrophication. In the open coast regime, the ecosystem functions efficiently within the available limits of space, time, and energy. Primary productivity involves photosynthesis where sunlight is amply available for energy to drive the process. (In a situation of limited sunlight in the deep ocean there is no photosynthesis.) Photosynthesis utilizes carbon dioxide for synthesis and gives off free oxygen. Carbon dioxide now is receiving considerable attention nationally and globally as a greenhouse gas leading to adverse climate change. Carbon dioxide uptake by primary producers is highly desirable for this purpose. Granted, the extent of primary productivity from nutrients from MCBH is relatively small, but in principle, it gives a net positive environmental outcome. Nutrients in our open

coastal waters in general will be good by promoting primary production with attendant reduction in greenhouse gas emissions consistent with national and international policy.

It is unlikely, that problems of eutrophication would occur in the open coast regime as it could in an embayment, given the scale of urbanization and population growth physically possible for Oahu.

That ultimate boundary condition for the open coast regime referred to here is best described in Mark Denny (2008) as a two layered ocean stratified by a stable thermocline derived from glacial water flow and tropical climate temperature giving turnover rates of the inner ocean layer on the order of 500 to 1000 years. Not hours, or days typical of technology, but centuries. That is not to say, that the intent here is to extend the disposal system to the middle of the Pacific. This characterization is made to show that for the open ocean disposal systems, space, time, and energy is virtually boundless for our island ecosystem, limited only by our ability to engineer the system cost-effectively. For all practical purposes, there are no physical limits to our boundary conditions for water quality management and we can rely on nature as a partner to the maximum extent feasible.

On the contrary, imposing effluent limits for nutrients, nitrate-nitrite nitrogen and ammonia nitrogen will diminish or eliminate completely the positive environmental effects of primary productivity on green house gas emissions. Worse yet, we will be building a greenhouse gas manufacturing plant in the process of applying technology for treatment. Fossil fuel derived energy is typically needed to drive that technology with corresponding greenhouse gas emissions. With an activated sludge anoxic selector plant for nitrogen removals typically to nitrogen gas, there will also be a contribution of nitrous oxide which is produced in the biochemical pathway to the nitrogen end product (Wrigglesworth, 1997). Although likely to occur in small quantities, the global warming potential of nitrous oxide is significant, 310 times the carbon dioxide value! Even that little bit could have a significant impact.

The discharge from the MCBH treatment plant by itself is small by comparison to the sum of all other point discharges on the island. But considering the sum of all similar point discharges for Oahu, the cost for compliance for the effluent limits in capital and operating expense over the lifetime of the facilities could well add up to a billion dollars. And for what? To solve a problem artificially created? That is absurd. We, as a community, will look awfully foolish attempting to solve an environmental non-issue while adding to the problem of climate change in the process that our nation and the rest of the world are trying to forestall. It is certainly not in the public interest. It would be criminal to be forced to pay for it as citizens.

By comparison, it will cost nothing in expense to remove the effluent limits from further consideration.

For more complete treatise on the science of nutrients in the marine environment refer to Mark Denny (2008), and John Wrigglesworth (1997) in the list of references at the end. Mark Denny's book is very readable. Wrigglesworth is more technical but informative. In addition, to gain a better perspective of what the discharge conditions are like in the receiving waters, go out for an onsite visit to look.

#### Recommendation.

1. Remove the proposed effluent limits.

2. Take advantage of nature to manage water quality impacts from effluent discharges in our coastal waters. Nature knows best.
3. Monitor in situ performance of nutrient concentrations and mass emissions in space and time and the corresponding indices of primary productivity for the respective mass emission rates.
4. Manage water quality impacts by adjusting design parameters of the disposal system from a holistic evaluation. Everything is interconnected to everything else.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. Further, as previously discussed in this response to comments, the effluent limitations for ammonia nitrogen and nitrate + nitrite are based on estimated current treatment performance, and costly facility upgrades are not expected to be necessary for the Permittee to comply. Applicable effluent limitations for ammonia nitrogen and nitrate + nitrite have been included in the proposed permit based on the requirements and HAR 11-54 and 11-55.

4. Chlordane is banned from use. The residue in the environment comes from past usage and will most likely continue to persist well into the future.

Like the rest of the persistent synthetic chemicals, they will eventually permeate the earth's ecosphere following the second law of thermodynamics (entropy). DDT is an example that has been documented. The pathways and kinetics are often unclear but the end result is certain.

It is likely that groundwater infiltration into the sewer is a source of chlordane. If so, chlordane will naturally permeate also into the nearshore coastal waters and diffuse into the offshore waters. Ultimately, chlordane will reach equilibrium in concentration uniformly over space. It may degrade in time in the distant future well beyond the half life of the compounds.

Placing effluent limits on chlordane serves no useful purpose in environmental quality control. It would incur cost unnecessarily. It is more important to assure through monitoring that no new sources of chlordane are occurring.

Recommendation:

The effluent limits should be removed and monitoring continued to assure no new discharge is occurring.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. HAR 11-54, 11-55, the STCP, or applicable federal regulations do not provide an exception for legacy pollutants within permittee's effluent.

5. The use of T. Gratilla should be discontinued and replaced by a more stable test organism. The results would always be suspect since the test organism appear to be overly sensitive to the test conditions.

Experience with WQPO (1972) suffered the same predicament using oyster larvae and nehu. They were overly sensitive and simply confused the results. The issue was resolved by the choosing damsel fish and tilapia. Stickleback was also attempted to correlate mainland effluent

results but there was an issue going outside of the local environment for the test organism or importing a nonnative animal and risking proliferation.

Bioassays for toxicity are not deterministic procedures. It is probabilistic/stochastic, giving some indication of risk or the odds of a toxic property being present. There are many uncertainties in interpretation. Nevertheless it can be useful. The analytical "noise" is the problem.

In any case, the in situ monitoring of the biological communities will be necessary data/information to supplement decisions on adequacy or acceptance.

Recommendation.

Choose an alternative test organism to satisfy the requirement for whole effluent toxicity.

**Response:** The commenter does not support the assertion that the use of *T. gratilla* is "overly sensitive". The use of *T. gratilla* is appropriate because it is a local species that has demonstrated sensitivity to toxicity present effluents discharged in Hawaii. The narrative toxicity limitation contained in HAR 11-54-4 requires all waters shall be free of substances attributable to domestic, industrial, or other controllable sources of pollutants, including: toxic substances at levels or in combinations sufficient to be toxic or harmful to human, animal, plant, or aquatic life. To evaluate compliance with this requirement, HAR 11-54-4(b) establishes the use of whole effluent toxicity testing. To ensure the protection of aquatic life from toxic substances, a species sensitive to toxicity should be selected. The use of a robust species does not ensure compliance with the narrative toxicity standard established in HAR 11-54. *T. gratilla*'s sensitivity to toxicity within effluents, combined with it being a local species, is exactly what makes the selection of *T. gratilla* appropriate for evaluating compliance with the applicable water quality standards. The use of *T. gratilla* is continued in the proposed permit.

6. The federal initiative is to upgrade standards and press for ever more stringency in permit conditions. The intention is well meant, but it appears to be creating an ever more complex system to regulate and administer. The danger is getting mired in attempts to sort out the complexities of the means and ignoring the ends.

Historically, after the passage of NEPA in 1969, the environmental laws for air, water, drinking water, hazardous materials, toxic substances, etc. were passed in rapid succession piecemeal by Congress at different times, by different committees, following different environmental criteria, while all professing to be for the good of public health and the environment.

Imposing effluent limits is a case in point. It appears short sighted and operating in a silo. At the very outset of the environmental ground swell in the 1960s, many argued for an holistic approach. Barry Commoner's laws of ecology is a classic result. The idea of the unity of nature was also brought out in the announcement of the then President Nixon when the US EPA was formed in 1970. The President said .... "Despite its complexity, for pollution control purposes the environment must be perceived as a single related system." He went on to announce, "A far more effective approach to pollution control would identify pollutants; trace them through the entire ecological chain, observing and recording changes in form as they occur; determine interactions among forms of pollution; (and) identify where on the ecological chain interdiction would be most appropriate." (Ruckelshaus, 1985)

Things got even more complex as time went on. We now have a mixed bag of issues involving science and the law. Ruckelshaus (1985), the first Administrator of the newly formed US EPA

under President Nixon, in hindsight, recommended taking Rene Dubos' suggestion to heart in resolving the environmental complexity by:

"Thinking globally, and acting locally."

Case in point: we cannot apply Continental USA solutions to environmental problems to Hawaii. We must act locally to deal with our own issues. The corollary is to say one-size-fits-all approach does not work for the environmental issues remaining for our future. Maybe at one time in the past it was useful. Not any more.

The case for Ruckleshaus' statement was originally quoted by Rene Dubos in the period of the environmental movement in the 1960s and 70s. It was applicable back then. More than ever it is applicable now and to our future. Therefore, it is time to go back to our future and move on.

Recommendation.

1. Keep it simple and relevant.
2. Think globally, and act locally.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. Further response to the commenter's opinion on environment solutions and current regulations are outside the scope of this response to comments.

#### **Comments received on September 19, 2013 from Roy K. Abe**

1. Chlordane (Page 3. Par. A.1.a). The proposed effluent limits of 0.030 llg/L (annual average) and 0.74 llg/L (maximum day) for Chlordane should be eliminated. Chlordane is a legacy pesticide that was widely used to treat for ground termites. The use of Chlordane has been banned in the U.S. for about 25 years. Chlordane is a carcinogen and the lower limit in the WQS is based on possible carcinogenic effects from human consumption of fish containing the pesticide due to bioaccumulation in the food chain.

The Chlordane found in the effluent is likely due to the pesticide leaching into the sewer system via groundwater infiltration. Past sampling of urban streams has shown highest levels of contamination when all the stream flow was from groundwater discharge. Chlordane-contaminated groundwater infiltrating via sewer pipe defects is likely to be the primary source of Chlordane. Since Chlordane is relatively insoluble and binds readily to soil particles, contaminated soil infiltrating through defects in service lateral lines located in pesticide treated soil may be an added source of Chlordane during heavy rainfall. Cast iron and clay pipe lateral sewers servicing older homes in areas which experience high rainfall, corrosive soils and ground settlement often exhibit holes, separated joints, and other structural defects.

Removal of Chlordane through conventional treatment process is difficult and likely to be ineffective. Specialized treatment processes would be very costly and are likely to have no direct public health benefits. Rehabilitation of sewer lines to reduce infiltration and minimize entry of Chlordane to the sewer system would be a more logical corrective action than implementing treatment to remove the pesticide from the wastewater. The extent of infiltration

that can be removed from the collection system, however, is uncertain. There is no evidence that Chlordane bioaccumulates in the marine life at or near the outfall.

There is no evidence that the marine life, if actually affected by Chlordane bioaccumulation, is consumed by humans in significant quantities. It is highly unlikely that substantial bioaccumulation is occurring in the marine life at the outfall due to strong and varying currents that dilute and transport the trace amounts of Chlordane. Unlike river discharges, which consistently flow in the same general direction, currents in the open ocean constantly change directions in a largely unconfined environment. If bioaccumulation did occur in certain fishes congregating near the outfall, it is unlikely that sufficient amounts of these fishes would be caught and consumed to have a noticeable carcinogenic effect. In the unlikely event that affected fishes were proven to be a health concern, a more cost effective mitigative measure would be to simply ban fishing near the outfall. A "no fish" zone could be delineated by buoys.

Since Chlordane may be present in groundwater that discharges to streams and nearshore waters, bioaccumulation in fishes caught in nearshore waters with limited circulation, such as bays and coastal Hawaiian fishponds, would appear to pose a greater health concern. In past studies (see <http://www.epa.gov/region9/water/npdes/pdf/sand-island/SI-appl-appxDchlordane-dieldrin.pdt>) for the Sand Island WWTP basin, Chlordane was found in urban streams at higher levels than the wastewater collection system. The studies also indicated that the maximum level of chlordane found in stream sediments was 600 times the maximum level found in ocean sediments. Furthermore, it was suspected that the Chlordane found in the sediments within the Sand Island zone of mixing may have been caused by Chlordane bound to grit and sludge discharged through the outfall between 1976 and 1979 prior to completion of the Sand Island solids handling facilities.

It might be argued that the discharge of Chlordane into the deep ocean via sewer infiltration and the outfall could potentially be a benefit by reducing discharge of the carcinogen in nearshore waters where bioaccumulation is more likely to occur.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. HAR 11-54, 11-55, the STCP, or applicable federal regulations do not provide an exception for legacy pollutants within permittee's effluent.

2. Enterococci (Page 3, Par. A.1.a): The proposed effluent enterococci limits of 6,510 CFU/100 mL (average monthly) and 93,186 CFU/100 mL (maximum daily) should be eliminated. A costly upgrade of the disinfection system to lower enterococci levels should be justified by presenting data showing that water quality violations are occurring and that the violations can be attributed to the discharge. Expenditure of funds for effluent disinfection would provide little measurable benefit and waste funds that could be used for more effective public health protection actions.

It is not clear why the average monthly effluent limit is being established based on Chapter II-54's 35 CFU/100 mL criteria when the outfall is considerably farther offshore than the 1,000 feet boundary limit for this parameter. The additional travel distance to the 1,000 foot offshore boundary would increase dilution and increase die-off of bacteria due to exposure to salt water and sunlight.

Both enterococci concentrations and outfall dilution factors can vary considerably. The assumption that the maximum enterococci concentration and minimum dilution occurs at the

same time appears overly conservative. Furthermore, there may be some Enterococci die-off during transmission of the flow from the MCBH WRF to the outfall diffuser ports. Exposure of the enterococci in the MCBH effluent to rapid changes in osmotic pressure from differences in salinity of the MCBH effluent, City'S Kailua effluent, and saline seawater may promote some enterococci die-off. It would appear that additional monitoring and statistical analysis of the data to support the proposed enterococci limits is justified.

If there are health concerns due to the outfall discharge, a simple ban of recreational activities in the vicinity of the outfall would be a cost-effective solution.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. The discharge consists of treated sewage which may contain pathogens at elevated concentrations if not properly disinfected, sufficient to impact human health or the beneficial uses of the receiving water. Consistent with 3.3 of EPA's TSD, the regulatory authority should consider additional information discussed under Section 3.2 (i.e., type of industry, type of POTW, type of receiving water and designated uses, ect.) when evaluating reasonable potential. Reasonable potential can be determined without effluent or receiving water exceedances of applicable water quality criteria. Because the facility is a POTW, and pathogens are characteristic of treated municipal wastewater, and the beneficial uses of the receiving water include recreation where human contact may occur, reasonable potential for enterococcus has been determined. To ensure the protection of human health, this permit establishes effluent limitations for enterococcus.

HAR, Section 11-54-8(b) establishes water quality objectives for marine recreational waters within 300 meters (1,000 feet) of shore. As discussed in Part E.3.a of the Fact Sheet, the proposed permit establishes receiving water limitations for marine recreational waters within 300 meters (1,000 feet) from shore based on State regulations contained in HAR, Chapter 11-54. Federal regulations at 40 CFR 131.41(c)(2) establish water quality standards for bacteria in marine waters beyond 300 meters from shore, based on CWA Section 304(a). 40 CFR 122.44(d)(1)(vi)(B) states that where a State has not established a water quality criterion for a specific pollutant with reasonable potential, the permitting authority must establish effluent limitations on a case-by-case basis, using EPA's water quality criteria published under Section 304(a) of the CWA. Since Outfall Serial No. 001 is beyond 300 meters (1,000 feet) off shore, there is no applicable State water quality objective for the discharge, and EPAs criteria for enterococcus specified in 40 CFR 131.41 is applicable.

As described in the fact sheet, the use of a minimum initial dilution of 186:1 was used to calculate the proposed effluent limitations for enterococcus. Although human contact with the receiving water may be infrequent, human contact within the zone of mixing may occur, thus for the protection of human health due to the potential for acute illness from pathogens the initial dilution was determined to be appropriate. The use of the initial dilution is intended to be protective of water quality standards, beneficial uses, and human health. Human health may be impacted from short term exposure to elevated concentrations of pathogens, thus the provided dilution must be conservative to account for all reasonable discharge scenarios. Further, the initial dilution used to calculate the proposed effluent limitation currently represents the only known dilution for the outfall.

Currently, the "simple ban of recreational activities in the vicinity of the outfall" is not a viable option, and results in an immediate impact on the beneficial uses of the receiving water, which include recreation.

3. Ammonia (Page 4, Par. A.1.a): The proposed ammonia limits of 2.0 ug/L (geometric mean) and 5.0 ~g/L (single sample maximum) is unreasonable and unrealistic, and should be eliminated. Treatment technology does not exist to achieve such low levels of ammonia in the effluent. The receiving water clearly has significant assimilative capacity since for the period from 2008 through 2012, the Fact Sheet indicates that the geometric mean was below the 1.8 ~g/L value (90% of the WQS geometric mean limit) for four of the five years. Continued receiving water monitoring should be adequate to detect and evaluate adverse impacts from the MCBH discharge.

The use of a single sample maximum limit is not consistent with the intent and basis of the WQS. The basis of the standards is explained in the report, "Water Quality Program for Oahu with Special Emphasis on Waste Disposal, Final Report, Work Area 4, Water Quality Standards and Criteria," City and County of Honolulu, April 1972, prepared jointly by Engineering Science, Inc.; Sunn, Low Tom and Hara, Inc.; and Dillingham Corporation. An excerpt from this report is presented in Attachment No.1. The WQS clearly recognizes that measured water quality parameters will vary due to many factors and that high values will occur periodically.

Another important document that addresses the basis of the WQS is the 208 Plan report, "An Ecosystem Approach to Water Quality Standards, Report of the Technical Committee on Water Quality Standards," December 1, 1977, prepared by Department of Health, State of Hawaii. Relevant excerpts from the report are presented in Attachment No.2. The report recommends obtaining sufficient samples taken over a year to be 95 percent confident that the measured geometric mean is within about 20 percent of the true geometric mean. The Fact Sheet does not discuss the adequacy of the data in meeting this confidence level.

Compliance with WQS and the need for additional treatment should be based on long term trends as well as evidence of adverse impacts. The Fact Sheet provides no evidence of adverse water quality or ecosystem impacts.

Due to development in the region, changes to the ambient water quality and background constituent levels are possible. The WQS limits should be periodically reevaluated based on evaluation of long-term data to determine whether background levels have changed. If water quality is being degraded by stormwater, pollution control funding should be focused on improving stormwater quality. The control monitoring stations may be affected by changes in ambient water quality, and in some cases, more that the ZOM monitoring stations. Long term data should be examined to evaluate whether there are clear trends and whether any water quality degradation can be attributed to the outfall discharge.

It is imperative to understand that our marine outfalls, current structure, bathymetry, and receiving water inhabitants and ecosystems differ from what is encountered in the continental U.S. The WQS are based on extensive monitoring and investigations conducted in the early 1970's as part of the previously mentioned Water Quality Program for Oahu. The deep ocean outfalls designed to meet the WQS, and together with other water quality programs, have proven to be effective in protecting public health and the environment over the many decades since the WQS have been implemented.

Determinations of non-compliance and justification for any additional treatment must be based on analyses that are consistent with the statistical basis and intent of the WQS, which clearly recognizes that conditions can vary significantly in the natural environment. While application of standard accepted procedures used elsewhere may facilitate development of permit limits,

application of a statistically invalid approach would not be beneficial to the public or the environment.

Removing nutrients as well as other constituents when it is not necessary is actually detrimental to the environment and is a heavy financial burden. Nutrient removal processes require significant additional infrastructure, funding, and expenditure of energy. Both capital and annual operating costs associated with new nutrient removal process would be significant. These funds could clearly be used for more effective environmental protection and enhancement projects.

Increased energy use would result in increased production of green house gases, which has grown to be a significant environmental concern. Since the environmental benefits would be negligible, the funds for nutrient removal would essentially be spent to harm the environment. There is clearly a dire need to revise and update the water pollution regulations to consider impacts on air quality and long-term sustainability.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. Further, as previously discussed in this response to comments, the effluent limitations for ammonia nitrogen and nitrate + nitrite are based on estimated current treatment performance, and costly facility upgrades are not expected to be necessary for the Permittee to comply. Applicable effluent limitations for ammonia nitrogen and nitrate + nitrite have been included in the proposed permit based on the requirements and HAR 11-54 and 11-55.

The fact sheet provides a comparison of annual geometric means to applicable water quality standards. Annual geometric means represent a reasonable period to observed season variations within the receiving water, and determine negative impacts on the receiving water (exceeding water quality standards at the edge of the ZOM). Comments regarding the water quality standards are outside the scope of this response to comments, and are appropriate during revisions of the water quality standards. Further, as previously discussed, long-term trends were evaluated for nutrients from 2009 through 2012, resulting in revised permit conditions for ammonia nitrogen (receiving water was determined to have assimilative capacity).

The use of a single sample maximum in the proposed permit is based on observed facility performance, and is being applied to maintain the current treatment performance demonstrated by the Permittee over the last several years to minimize the potential for additional exceedances of water quality standards at the edge of the ZOM. Because an applicable dilution is not currently known for the edge of the ZOM, water quality-based effluent limitations using a dilution and water quality criteria can not be calculated. A requirement to evaluate dilution and assimilative capacity has been established in the permit, and may be used during future permitting efforts to calculate appropriate end-of-pipe effluent limitations. Until that information is available, maintaining current treatment capabilities, and evaluating compliance at the edge of the ZOM is reasonable to protect water quality and implement water quality standards without establishing direct end-of-pipe effluent limitations for ZOM parameters without dilution (since one is not known), or initial dilution (which may be overly stringent at the edge of the ZOM).

4. Nitrate+Nitrite Nitrogen (Page 4, Par. A.I.a): The proposed nitrate + nitrite nitrogen limit of 6,230 ug/L (single sample maximum) is also unreasonable and not beneficial to the environment. While treatment technology does exist to achieve such low levels of nitrate + nitrite nitrogen, upgrading treatment to meet this very stringent limit requires a tremendous capital outlay and will not result in any benefit to the environment. There is no evidence that

nitrate + nitrite nitrogen discharged through the outfall has any adverse impacts on the marine environment. Financial and adverse environmental impacts and reasons for eliminating the proposed limit discussed above for ammonia similarly apply for nitrate + nitrite nitrogen.

If establishing a nitrate + nitrite nitrogen effluent limit is justified, a dilution factor for the ZOM should be determined and evaluated. The need to achieve low nitrogen limits causes nitrogen removal costs to escalate significantly. It should be noted that the MCBH WRF uses a trickling filter attached growth process that cannot be readily modified to produce effluent with low levels of nitrate + nitrite nitrogen.

The primary purpose of limiting nitrate + nitrite nitrogen in the receiving water is to curtail excessive algal growth. There is no evidence of excessive algal growth caused by the discharge from the outfall. It should be noted that algal blooms, instead, have occurred at the mouths of Windward Oahu streams as a result of nutrients in stormwater runoff. If any funds are to be expended, they should be directed to improving stormwater quality, where at least some benefits may be realized.

Attachment No.3 provides a brief summary of water quality monitoring work performed by University of Hawaii researchers. Although the summary was prepared in 2000, it provides a good synopsis of the intensive biological monitoring that has been performed and the lack of adverse impacts. Monitoring to evaluate compliance with WQS limits is helpful, but these in-depth studies present a more accurate picture of actual impacts, or in this case, the absence of impacts.

**Response:** DOH is obligated to implement applicable water quality standards within NPDES permits for parameters for which the Permittee has demonstrated reasonable potential to cause or contribute to an exceedance of water quality criteria. Further, as previously discussed in this response to comments, the effluent limitations for ammonia nitrogen and nitrate + nitrite are based on estimated current treatment performance, and costly facility upgrades are not expected to be necessary for the Permittee to comply. Applicable effluent limitations for ammonia nitrogen and nitrate + nitrite have been included in the proposed permit based on the requirements and HAR 11-54 and 11-55.

The use of a single sample maximum in the proposed permit is based on observed facility performance, and is being applied to maintain the current treatment performance demonstrated by the Permittee over the last several years to minimize the potential for additional exceedances of water quality standards at the edge of the ZOM. Because an applicable dilution is not currently known for the edge of the ZOM, water quality-based effluent limitations using a dilution and water quality criteria can not be calculated. It is the responsibility of the Permittee to provide all relevant information during the permitting process. A requirement to evaluate dilution and assimilative capacity has been established in the permit, and may be used during future permitting efforts to calculate appropriate end-of-pipe effluent limitations. Until that information is available, maintaining current treatment capabilities, and evaluating compliance at the edge of the ZOM is reasonable to protect water quality and implement water quality standards without establishing direct end-of-pipe effluent limitations for ZOM parameters without dilution (since one is not known), or initial dilution (which may be overly stringent at the edge of the ZOM).

## 5. Concluding Statements

It is recommended that a comprehensive water quality monitoring program be implemented to obtain updated water quality data. This could serve as the basis for preparing an update to the

WQS and also facilitate evaluation and verification of impacts from the various outfalls and nonpoint sources. The WQS should be revised to include detailed information on appropriate statistical analyses procedures to be used in analyzing monitoring data to ensure that the data is properly interpreted.

I would urge the permit writers to keep an open mind, and take a scientific and common sense approach to developing effluent limits for the MCBH WRF and other treatment plants throughout the state. Please allow our utility agencies to direct limited financial resources to pollution and public health enhancement projects that will result in measurable benefits. Unreasonable effluent limits will only lead to an appeal and possible litigation that will further consume the limited manpower and financial resources of the stakeholders.

**Response:** Comment acknowledged.

**Comments received on September 19, 2013 from Lee A. Mansfield, P.E.**

The technical and scientific concerns with the proposed changes have been very well presented in comments prepared by Dr. James Kumagai and Roy Abe. I share their views and concur with their recommendations. In addition to these I wish to offer the following:

The proposed limits for nutrients and chlordane will require a very major investment in plant upgrades and a significant increase in operational costs is a fact that is certainly not in dispute. Moreover, these upgrades will result in significant environmental impacts of their own such as increased solids disposal and the production of greenhouse gas resulting from the generation of electricity needed for the additional, or expanded, plant processes. I feel strongly that before such standards are promulgated a detailed cost-benefit study be completed. We all must realize that resources are limited and to allocate capital and incur significant ongoing expenses without producing a benefit commiserate with the investment would be a grievous error. Only by the completion of such a study can one rest assured that resources will be allocated appropriately to address real environmental issues and produce tangible results of value to our community.

In my life time and throughout my career I have seen the clean water act bring real improvements to the environment, such as the dramatic improvement of water quality in our Great Lakes, Honolulu Harbor and Kaneohe Bay. Only through the proper allocation of our limited resources will we be able to continue to improve our environment and as such respect and honor the spirit of the Clean Water Act.

**Response:** Please see responses to comments prepared by Dr. James Kumagai and Roy Abe above.